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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,373	08/15/2003	Norio Chujo	16869N-089000US	2566
20350	7590	05/31/2005	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			VAN ROY, TOD THOMAS	
		ART UNIT	PAPER NUMBER	
			2828	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/642,373	CHUJO ET AL.
	Examiner <i>Pat Hartley</i> Tod T. Van Roy	Art Unit 2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 08/15/2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>02/17/2004</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### *Drawings*

Figures 10 and 11A-C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: fig.2c #32, fig.3 #2c, fig.4a #60b, and fig.4b #61b. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities:

Page 9 states "the rate of change in rise time"/"the rate of change in fall time" becomes equal to or greater than 1.3". This statement does not make sense as the specification points out that the fall time is less than the rise time, meaning the rate of change of the fall time would be greater than the rate of change of the rise time, and the ratio could then not be greater than 1. It is believed that this statement should be "the rise time"/"the fall time" becomes equal to or greater than 1.3", or that the inverse of the ratio should be used.

Page 9 also has a square symbol in place of what is thought to be a greater than or equal to symbol based on the description. This symbol needs to be corrected.

Appropriate correction is required.

### ***Claim Objections***

Claims 5 and 6 are objected to because of the following informalities:

A square symbol is present where a mathematical operator would be found. In light of the specification, the examiner has taken the meaning of these symbols to mean greater than or equal to. These symbols need to be corrected.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 5 and 6: Each of these claims depends on another claim stating that the rate of change of the fall time of the current is greater than the rate of change of rise time of the current. Since this is the case, the stated ratio of the rate of change of the rise time/the rate of change of the fall time could not be greater than 1. The examiner has taken the meaning of these ratios to be reversed, i.e. the rate of change of the fall time/the rate of change of the rise time would be greater than or equal to 1.3. (see the specification objection for further explanation)

With respect to claims 7 and 8: It is unclear as to what the meaning of "based on" is to be taken as since the relationship between the overshoot value and the average voltage of the optical output waveform during a relaxation oscillation period was not brought forth in the disclosure. The examiner has taken the meaning to be that the value of the resistor/thermistor divider network is predetermined from calculations done to determine the average voltage of the optical output waveform during a relaxation oscillation period, rather than utilizing some sort of feedback adjustment.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishimoto (JP 401048481A).

With respect to claim 1, Nishimoto discloses a directly modulated optical module wherein optical output intensity of a semiconductor laser (fig.2 #11) is modulated by changing a current (fig.2 #16) allowed to flow into the semiconductor laser depending on a transmission signal (fig.2 output from #17), said directly modulated optical module comprises a driver circuit (fig.1 #2) outputting a current having a trapezoidal waveform to the semiconductor laser (fig.1 and 4, abstract, where it is taught the pulse output to the laser can be of a trapezoidal shape) wherein the trapezoidal waveform is characterized in that a rate of change in fall time of the current is greater than the rate of change of rise time of the current (fig.4, abstract).

With respect to claim 3, Nishimoto discloses the modulated optical module described in the rejection to claim 1, and further discloses a driver circuit (fig.2) which if

no control signal is received from the external (fig.2 #17), outputs a trapezoidal waveform corresponding to the transmission signal (fig.2 coming into #14), wherein the trapezoidal waveform (definition included with office action) is characterized in that the fall time of the current is equal to or longer than the rise time of the current (seen in fig.2), and control means (fig.2 #17) for controlling the driver circuit so as to make the fall time of the output current shorter than the rise time of the output current (fig.1 and 4, abstract, where it is taught the pulse output to the laser can be of a trapezoidal shape).

With respect to claim 9, Nishimoto discloses the modulated optical module described in the rejection to claim 1, and further discloses a semiconductor laser (fig.1 #1) which if a pulsed modulation current whose rise time and fall time are almost the same length, has relaxation oscillation at a rising edge of the pulsed modulation current (fig.8) and a driver circuit (fig.1 #2) having a trapezoidal waveform to the semiconductor laser (fig.1 and 4, abstract, where it is taught the pulse output to the laser can be of a trapezoidal shape) wherein a fall time of the current is shorter than a rise time of the current.

Claim 10 is rejected for the same reasons as claim 9. This claim merely details the methods of supplying a trapezoidal current to the laser diode. The method of supplying a current is not germane to the patentability of the circuit itself, therefore these limitations are not given patentable weight. At best these claims could be characterized as product-by-process claims, where the process limitations are not limiting, only the structure implied by the process. See MPEP 2113. Here, the structure implied by the process steps is merely the structure of claim 9.

Claim 2 is rejected under 35 U.S.C. 102(e) as being anticipated by Iguchi et al. (US 6597209).

With respect to claim 2, Iguchi discloses a directly modulated optical module wherein optical output intensity of a semiconductor laser (fig.4 VCSEL) is modulated by changing a current (fig.4 input to #3) allowed to flow into the semiconductor laser depending on a transmission signal (fig.4 output from #5), said directly modulated optical module comprises a driver circuit (fig.4) outputting a current which is overshot during a transient period associated with a rising edge of the current (fig.6A).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimoto in view of Iguchi.

With respect to claim 4, Nishimoto teaches the modulated optical module including a driver circuit outputting a current having a trapezoidal waveform as described in the rejection to claim 1. Nishimoto does not teach that the waveform to include a control to add an overshoot current during the rising edge of the current. Iguchi teaches the use of a laser diode driving circuit wherein an overshoot current is applied during the rising edge of the current. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the modulated optical module of Nishimoto with the overshoot current of Iguchi in order to improve the eye pattern of the laser for improved transmission (Iguchi, col.2 lines 1-18).

***Allowable Subject Matter***

Claims 5-8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

With respect to claims 5 and 6, as interpreted by the examiner, the limitations on the slopes of the trapezoidal current being used to drive a semiconductor laser were not found to be taught in prior art.

With respect to claims 7 and 8, as interpreted by the examiner, the limitations on the value of the current overshoot of the semiconductor laser driver circuit current

output to be a function of the average voltage of the optical output waveform during a relaxation oscillation period were not found to be taught in the prior art.

The examiner notes the need for these claims to overcome the 112 2<sup>nd</sup> paragraph rejections, as well as the fact these claims are dependent on rejected claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR

MINSUN CH HARVEY  
PRIMARY EXAMINER